

*Sub B
17
canceled*

8. A vibration wave driving apparatus according to Claim 7, wherein the surface of said output shaft supported by the sliding bearing or the bearing surface of said sliding bearing is formed of resin.

*A
cont.*

9. (Amended) A vibration wave driving apparatus according to Claim 7, wherein the through-hole of said rotary member has a bearing supported by said output shaft.

REMARKS

The claims now pending in the application are Claims 1 to 9, with Claim 1 being the only independent claim. Claims 10 to 17 have been canceled. Claims 1, 2, 6 and 9 have been amended herein.

In the Official Action dated October 3, 2001, Claims 1 and 3 were objected to as being substantial duplicates of Claims 7 and 9. Claims 1 and 17 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,140,741 (the Tamai '741 patent). Claims 1 to 17 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Tamai '741 patent in view of U.S. Patent No. 5,739,623 (the Kanazawa '623 patent).

Reconsideration and withdrawal of the objection and rejections respectfully are requested in view of the following remarks.

Initially, in response to the formal objection to the claims, Claim 9 has been amended to depend from Claim 7, to correct an inadvertent typographical error. However, the objection to Claim 7, as being substantially duplicative of Claim 1, respectfully is traversed. Independent Claim 1 recites the feature of "a plurality of bearings", without

further limitation; dependent Claim 7 recites the additional feature that “at least one of the plurality of bearings is a *sliding bearing*” (emphasis added), that is, at least one of the plurality of bearings is a specific type of bearing, thereby further limiting the scope of the invention recited in independent Claim 1. Reconsideration and withdrawal of the objection respectfully is requested.

The rejection of Claims 1 and 17 under 35 U.S.C. 102(b) respectfully is traversed. Initially, Applicant submits the Tamai '741 patent is not prior art under 102(b), because it was not patented or described in a printed publication, more than one year prior to the date of application for patent in the U.S., as required by that section of the statute. Nevertheless, Applicant notes the Tamai '741 patent qualifies as prior art under section 102(e), because it was filed by a different inventive entity before the presumptive invention date of the Applicant. In responding to the Official Action, Applicant assumes that the Tamai '741 patent is being applied under 35 U.S.C. 102(e).

The rejections of the claims over the cited art respectfully are traversed. Nevertheless, without conceding the propriety of the rejections, Claims 10 to 17 have been canceled, and Claims 1, 2 and 6 have been amended to recite more clearly various novel features of the present invention. Support for the proposed amendments may be found in the original application. No new matter has been added.

Independent Claim 1 relates to a vibration wave driving apparatus, and recites, *inter alia*, the features of an output shaft extending through a through-hole of a vibration member and a rotary member, and rotatable with said rotary member, where *the output shaft supports the vibration member within the through-hole of the vibration member for rotation relative to the output shaft*. As disclosed in greater detail in the present

application, and as will be readily understood by those skilled in the art, this structure of the present invention provides a significant improvement over structures of the prior art in that, by supporting the vibration member in the through-hole, the output shaft helps stabilize the vibration member and prevents the vibration member from shifting out of radial alignment within the actuator device.

Applicant submits that the prior art fails to anticipate the present invention. Moreover, Applicant submits that there are differences between the subject matter sought to be patented and the prior art, such that the subject matter taken as a whole would not have been obvious to one of ordinary skill in the art at the time the invention was made.

The Tamai '741 patent is directed to a vibration type actuator including a vibration member, a movable member (rotor) 8, and an output shaft 2 extending through a through-hole of a shaft-shaped fastening member (hollow bolt) 1 of the vibration member and a through-hole of the moveable member 8, and rotatable by rotation of the movable member 8 (*See, e.g.*, Fig.1 and Claim 1 of the Tamai '741 patent). However, Applicant submits that the Tamai '741 patent fails to disclose or suggest at least the above-discussed features of the present invention. In the Tamai '741 patent, the vibration member is constructed of a disk-shaped support member 3 and a piezoelectric element 4 sandwiched between two metallic members 5 and 6 and fastened together by fastening member 1, where the vibration member is supported by the support member 3 (*See Fig. 1 and the corresponding text at column 2, lines 10 to 18*). Figs. 4 and 6 illustrate additional embodiments having a similar construction. As clearly illustrated in each of these embodiments, the Tamai '741 patent teaches that the diameter of the hollow portion of fastening member 1 (and thus the vibration member) is substantially larger than that of the output shaft 2. Nowhere does the

Tamai '741 patent disclose or suggest that the output shaft 2 is arranged to support the vibration member within the through-hole of the vibration member, as disclosed and claimed in the present application.

The Kanazawa '623 patent relates to a vibration wave driven motor, and was cited by the Examiner as teaching the use of a sliding bearing. However, Applicant submits that the Kanazawa '623 patent fails to disclose or suggest at least the above-discussed features of the present invention, and fails to remedy the deficiencies of the Tamai '741 patent set forth above. Specifically, the Kanazawa '623 patent fails to disclose or suggest an output shaft that supports a vibration member within the through-hole of the vibration member, for relative rotation between the output shaft and the vibration member, as disclosed and claimed in the present application.

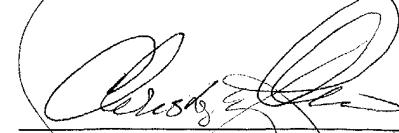
For the above reasons, Applicant submits that independent Claim 1 is allowable over the cited art.

Claims 2 to 9 depend from Claim 1, and are believed to be allowable for the same reasons. Moreover, each of these dependent claims recites additional features in combination with the features of independent Claim 1, and is believed to be allowable in its own right. Individual consideration of the dependent claims respectfully is requested.

Applicant believes that the present Amendment is responsive to each of the points raised by the Examiner in the Official Action, and submits that the application is in allowable form. Favorable consideration of the claims and passage to issue of the present application at the Examiner's earliest convenience earnestly are solicited.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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MARKED-UP VERSION OF THE CLAIMS

1. (Amended) A vibration wave driving apparatus comprising:
 - a vibration member formed by an elastic member having an electro-mechanical energy conversion element fixed thereto, and having a through-hole [in the] extending through a central portion thereof;
 - a [vibration member supporting] support member fixed to said vibration member;
 - a rotary member [being] in [pressure] press contact with said vibration member, and having a through-hole [in the] extending through a central portion thereof;
 - an output shaft extending through the through-hole of said vibration member and the through-hole of said rotary member, and rotatable with said rotary member, said output shaft supporting said vibration member [in] within the through-hole of said vibration member for rotation relative to said output shaft [through-holes];
 - a case packaging said vibration member and said rotary member therein, and fixing one end portion of said support member, thereby supporting said vibration member [with the end portion of said vibration member supporting member fixed]; and
 - a plurality of bearings [for supporting said output shaft] provided in said case, said plurality of bearings rotatably supporting said output shaft.

2. (Amended) A vibration wave driving apparatus according to Claim 1, wherein at least a portion of the through-hole [itself] of said vibration member provides a bearing surface.

6. (Amended) A vibration wave driving apparatus according to Claim 3, wherein [the] said bearing supported by said output shaft is disposed substantially at [the] a node position of [the] vibration [of the] in said vibration member.

9. (Amended) A vibration wave driving apparatus according to Claim [1] 7, wherein the through-hole of said rotary member has a bearing supported by said output shaft.